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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
7601 W. Clearwater, Suite 102 • Kennewick, Washington 99336 • (509) 546-2990

March 17, 1994

Mr. Ron Izatt, Assistant Manager
Environmental Management, Acting
U.S. Department of Energy
P.O. Box 550, A3-42
Richland, WA 99352

Dear Mr. Izatt:

Re: Action Memorandum: North Slope (Wahluke Slope) Expedited Response Action Cleanup Plan, U.S. Department of Energy Hanford Site, Richland, WA

This Action Memorandum constitutes approval of the U.S. Department of Energy's (USDOE) proposed removal action as outlined in the *North Slope (Wahluke Slope) Expedited Response Action Cleanup Plan*, DOE/RL-93-47, Revision 0.

A number of public comments were received by the Washington State Department of Ecology (Ecology) on the North Slope (Wahluke Slope) Expedited Response Action (ERA) Cleanup Plan. The major concerns expressed in these comments are land use scenarios and cleanup costs. Although the land transfer issue is of major concern, the goal of this ERA is cleanup, not land transfer. Questions were also raised over the high cost associated with what has been perceived as a minimal scope of work. Since more than 99.5% of the area can be cleaned to acceptable levels for unrestricted land use at a potentially very low cost, the cost to clean the remaining portion (less than 0.5% of the area, or about 400 out of approximately 90,000 acres) to the same levels under the hazard removal option is too high. The total cost of this option is estimated to be approximately $21.8 million. Based on these comments, a thorough revision of the cleanup proposal was made.

Full scale hazard mitigation and the proper abandonment of wells should be performed. An observational approach (i.e., characterization concurrent with remediation activities) should be implemented before removal of any materials from the existing landfills. The complete excavation of the burial grounds in the worst case landfill, which comprise an estimated eight (8) acres of the H-06-L site, will be performed to determine if any hazardous substance or regulated waste is present. Using the analogous concept, further

characterization and excavation of the remaining landfills would follow based on the results obtained from the H-06-L landfill.

The recommendation made in this Action Memorandum is based on the existing regulations, the ERA goal, public comments received, the Future Site Uses Working Group's recommendation, costs, and implementability. Samples, excavations, and/or removals will be performed to determine if hazardous substances or regulated wastes are present at the H-06-L site. The observational approach will eliminate many unnecessary costs that might be incurred with total excavation of the landfills under the hazard removal option with no prior characterization. This analogous characterization approach will also eliminate many unnecessary excavation costs if no contamination is found at the H-06-L site or during characterization at any of the other nine landfills.

I. PURPOSE

The ultimate vision for the cleanup of the North (Wahluke) Slope, whether through an expedited response action or a final record of decision, is to meet the "unrestricted land use" expectations and recommendations of *The Future For Hanford: Uses And Cleanup*, The Final Report of the Hanford Future Site Uses Working Group, December 1992. The purpose of this ERA is to mitigate any threat to public health and the environment from hazards on the North Slope, and meet the ERA objective of cleanup to a degree requiring no further action. The intent of this action is to provide for the final removal action taken at the 100-IU-3 Operable Unit (the Wahluke Slope), and to issue a final ROD.

II. BACKGROUND

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the U.S. Environmental Protection Agency (EPA) recommended the 100 Area of the USDOE operated Hanford Site for inclusion on the National Priorities List (NPL) on June 24, 1988. In November 1989, the 100 Area was added to the NPL.

An agreement in principle was signed by the three parties on March 31, 1993, to complete remedial activity at the North Slope by October 31, 1994. In the most recent Tri-Party Agreement, signed by Ecology, EPA, and USDOE on January 25, 1994, a milestone was set to complete remediation activities by October 31, 1994.

A. Site Description

The North Slope, commonly known as the Wahluke Slope, represents about 140 square miles of the Hanford Site. The name "North Slope" comes from its geographical

relationship with the rest of the site (Figure 1). The area is north and northeast of and across the Columbia River from Hanford's main facilities.

Historically tribal land, the area was homesteaded by pioneers before it was taken by the federal government in 1943 as a security buffer to protect Hanford's defense production facilities. Anti-aircraft artillery and missiles were located on this land, but no plutonium production plants were built there. A brief description of the site is presented here. A more complete account can be found in the *North Slope (Wahluke Slope) Expedited Response Action Cleanup Plan (DOE/RL-93-47).*

All together, seven (7) anti-aircraft gun emplacements and three (3) Nike-Ajax missile positions were located on the North Slope. These positions were vacated in 1960-61 as the defense requirements at Hanford changed, and they were eventually demolished in 1974. USDOE currently leases approximately 25% of the North Slope area to the U.S. Fish and Wildlife Service. This area is managed as a wildlife refuge with limited public access. The remaining 75% of the North Slope is leased to the Washington State Department of Wildlife, and is operated as a wildlife management area open to the public during daylight hours.

In 1989 and 1990, an investigation of the North Slope was performed by USDOE to assess potential health, safety, and environmental concerns raised by Ecology and the public. As a result of that survey, 39 sites associated with military or homesteading activities were identified.

Military Sites:

Military records from the U.S. Army Corps of Engineers identify three (3) Nike missile battery sites, H-06, H-12, and H-83, and seven (7) anti-aircraft battery sites, PSN-01, PSN-04, PSN-07/10, PSN-12/14, PSN-72/82, PSN-80, and PSN-90 positioned on the North Slope. Remaining evidence of these sites includes reinforced-concrete foundation pads, scattered bottles and metal cans, gravel walkways, building rubble, drywells, and solid-waste landfill disposal areas. Ten solid-waste disposal landfills have been identified in the area. Each landfill represents a conglomeration of several burial grounds. Aboveground structures have been demolished. During military occupation, eight (8) water wells were installed. Seven (7) of the water wells are covered by concrete wellhead structures. These structures are still present. Other underground structures have been destroyed or backfilled. Exceptions are two rooms associated with anti-aircraft site PSN-04, and a few small structures at other sites.

Many of the buildings and permanent structures associated with these sites remained in place until they were demolished in 1974. Demolition debris was typically landfilled

onsite. Debris found in the vicinity of the military sites include oil and lubricant cans, paint cans full of dried paint, and empty solvent cans. Each military site contains asbestos-transite siding from building structures.

Each military site was reported to have its own motor pool. Some of these sites have sunken grease pits and concrete ramps. Only routine vehicle maintenance was performed at the sites.

Four (4) drywells associated with the military sites have been located. The drywells consist of 55-gallon drums, buried vertically to the rim with holes punched into the bottom to allow for percolation of the discarded (unknown) liquid. Additional drywells appear on facility drawings of the Nike missile positions. Field investigations were unable to locate these additional structures. The inconsistencies between the drawings and actual field observations indicate that these drawings are not as-built plans.

Geophysical surveys could not detect any underground storage tanks, although some of the construction drawings indicate the use of underground diesel fuel tanks. An interview with a former soldier stationed at Nike position H-83-C indicated that the tanks were not underground but rather of the skid-mounted variety.

In addition to the military camps, three (3) sites were found or reported to contain unexploded ordnance, which may have been disposed of in random locations throughout the area.

Non-Military Sites:

Several homestead locations can be identified by scattered cans, bottle shards, weathered lumber, water cisterns, or the remains of a disposal pit. Cisterns were structures used for the storing of water for domestic and livestock use. Seven cisterns have been located. They are typically concrete- or mortar-lined and range in size from 3 to 10 ft in diameter and 4 to 14 ft deep. They are relatively intact and present a physical hazard to persons or livestock.

Use of chemicals such as lime sulphur and lead arsenate occurred during the homestead years. In later years, DDT and other pesticides may have been used. In 1966, the site was used for disposal of 2,4-D-contaminated soil generated from leaking storage tanks located at a U.S. Bureau of Reclamation Station in Eltopia, Washington. The four (4) leaking tanks were taken out of service, emptied, crushed, then buried at the site in 1967.

B. **Site Characterization**

A limited site characterization was performed on the North Slope. A brief summary of the site characterization follows. A detailed account is presented in the cleanup plan (DOE/RL-93-47).

Landfills:

Site characterization activities included limited geophysical surveys at three landfills (PSN-04, H-06-H, and H-83-L). Both ground-penetrating radar and electromagnetic induction surveys were performed, which revealed several anomalies. Samples were obtained at these anomalies using hollow-stem auger drilling. A total of 32 samples were taken from these three landfills. Details of the sampling activities are described in the ERA cleanup plan. No areas of contamination above applicable, or relevant and appropriate requirements (ARARs) listed in section III(B) of this action memorandum were detected during the sampling effort.

Drywells:

Four drywells were sampled using a hollow-stem auger. One of the wells, H-81-R, showed the presence of asphalt. Using the analogous approach, three samples were also taken from an acid neutralization pit at H-12-L. No contamination above ARARs was detected.

Concrete Grease Ramp:

A concrete grease ramp, originally constructed for maintenance of vehicles, was dismantled during site investigation activities. The ramp, located at anti-aircraft site PSN-90, was utilized by unknown persons for performing oil changes. As a result, used motor oil was disposed of under the ramp and has contaminated the soil beneath the ramp. Samples taken from the site showed 65,000 ppm total petroleum hydrocarbons, and 1200 ppm lead.

Ordnance and Explosive Waste:

The North Slope Cleanup Plan identified the possibility that ordnance and explosive waste (OEW), and unexploded ordnance (UXO) may exist in burial pits. However, it is unknown if these ordnance burial pits are separate entities or part of the landfills associated with each anti-aircraft battery. The Shrapnel Area, Hanford Firing Range, and site PSN 07/10 were investigated by personnel from the U.S. Army Explosive Ordnance Detachment (EOD), Department of the Army, 53rd Ordnance Detachment,

Yakima Firing Center, with assistance from the Hanford Site Patrol, in the fall of 1989. The EOD performed a limited record search, conducted personnel interviews, and completed walk through surveys, sweeping the area with magnetometers. None of the landfills were investigated for OEW during this search. No surface or subsurface OEW or UXO was located during this cursory investigation. Phase 1 of the ordnance survey was completed January 7, 1994. Preliminary findings indicate the potential for ordnance contamination does exist.

2,4-D Soil Disposal Site:

An auger rig was used to obtain soil samples from eight (8) locations at the 2,4-D herbicide-contaminated soil disposal site. Prior to performing sampling activities, a magnetometer was used to verify the presence and location of the tanks disposed of at the site. No contamination above ARARs was detected as a result of this sampling effort. Additional information indicates a typical 2,4-D half life of 9.4 to 254 days under dry conditions. The area was not used for disposal of 2,4-D after 1967. Any traces of herbicide remaining should be undetectable because the 2,4-D was disposed of over 26 years ago (well over ten half lives).

Cisterns:

There are seven cisterns located at the site. The possibility exists that the pits may have been used for the disposal of pesticides, or oil because empty product containers were found in several of these cisterns. Visual examinations of all the cisterns were completed. Three of these cisterns, Clay Pit Cistern, Cow Camp Cistern, and Homestead Cistern, which exhibited the greatest potential for having contamination, were characterized. Soil samples were collected using a shovel and hand auger. No contamination above ARARs was detected. The remaining four cisterns were inspected for potential environmental hazards. The cistern bottoms were relatively free of debris. No discoloration of soil or identifiable environmental hazards were observed.

Cultural Resource Review:

A cultural resource review of the waste sites on the North Slope was performed in August 1993. All but five of the identified waste sites were considered insignificant. The five significant sites; the Homestead, Stock Tank, Overlook, 12-3, and Wagon Road Cisterns are considered to be significant because they provide information about early Euro-American activities on the Hanford Site. Backfilling will preserve the cistern walls, and will have no effect on their eligibility for the National Register of Historic Places. The Indian Tribes will be consulted, and work halted in the event tribal cultural resources are discovered. Hanford Cultural Resources Laboratory staff will direct the

use of machinery to prevent damage of cultural materials. The Washington State Office of Archeology and Historic Preservation has concurred with these findings.

Flora and Fauna Survey:

A flora and fauna survey has been performed in each area where ground disturbance will likely occur. Details of the survey are in the ERA cleanup plan. Seasonally correct surveys will be performed at a waste site prior to remedial action. This will assure impacts to potential endangered or threatened environmental species and wildlife will be minimized.

III. THREAT TO PUBLIC HEALTH OR WELFARE AND THE ENVIRONMENT

A. Present Conditions

The limited field investigations conducted at the site indicated cleanup action is required at the concrete grease ramp and H-81-R dry well. The primary hazards identified in the landfills are hazardous substances, regulated wastes, and the potential for ordnance.

USDOE is proposing to clean up the physical hazards associated with the site. This includes the abandonment of wells as outlined in the ERA cleanup plan.

B. Applicable, or Relevant and Appropriate Requirements

The ERA will be conducted in accordance with 40 CFR 300, Subpart E; 40 CFR 61, Subpart M; 40 CFR 262-263; 49 CFR 100-177; the Hanford Federal Facility Agreement and Consent Order (Part 3, Article XIII, Section 38); the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the State of Washington Model Toxics Control Act (MTCA, Chapter 173-340 WAC), and the State of Washington Dangerous Waste Regulation (Chapter 173-303 WAC).

IV. PROPOSED ACTION AND ESTIMATED COSTS

Westinghouse Hanford Company (WHC), as the USDOE contractor, prepared a cleanup plan incorporating an engineering evaluation/cost analysis (EE/CA) concerning technologies that were applicable to the North Slope. The proposal was submitted to EPA and Ecology by USDOE for parallel review, and was also made available for public comment for the period of 60 days. A public meeting was held on December 14, 1993, in Mattawa, Washington, to discuss the cleanup issues. After resolving public and

regulator comments, the document was revised. The revised document was finalized as the North Slope (Wahluke Slope) Expedited Response Action Cleanup Plan, Revision 0. The plan proposed four remedial action alternatives: The No-Action Alternative, as required by the CERCLA regulation; Hazard Mitigation; Total Landfill Exhumation and Demolition Debris Exhumation (Hazard Removal); and Characterization and Hazard Mitigation. The details of these alternatives are presented in the cleanup plan.

An evaluation of the proposed alternatives follows. This evaluation is based on the existing regulations, the ERA goal, public comments received, the Future Site Uses Working Group's recommendation, costs, and implementability.

A. No Action (Alt. #5.1): The very limited nature of the field activity does not justify this alternative. The existing sampling data is not sufficient for the regulators to support this alternative. Also, it does not support the unrestricted land use scenario proposed by the Future Site Uses Working Group, and lacks public support.

B. Hazard Mitigation (Alt. #5.2): Under this alternative, only the physical hazards will be removed from the site, and the wells will be abandoned. The cost for this alternative is estimated at $1,159,790. Under this option, there is no plan to investigate the possible existence and removal of hazardous substances in the various landfills. The existing sampling data is not sufficient for the regulators to support this alternative. Unless it is determined that the sites are clean, this alternative will not afford unrestricted use of the site. This option does not address future problems that may arise, and does not meet the Future Site Uses Working Group's recommendation of unrestricted land use.

C. Hazard Removal (Alt. #5.3): This alternative would include complete excavation and removal of all physical hazards, hazardous substances, and regulated wastes without prior characterization of the landfills. The total cost under this option is approximately $21.8 million.

Implementation of this alternative would meet the goal of ERA and would be supportive of Future Site Uses Working Group's recommendation of unrestricted land use.

D. Characterization And Hazard Mitigation (Alt. #5.4, USDOE Preferred Alternative): This alternative includes minimization of physical hazards (hazard mitigation), the complete excavation of burial grounds in the worst case landfill (H-06-L), characterization of the remaining nine landfills, and if required, complete excavation of burial grounds in any or all of the remaining landfills. The H-06-L landfill, covering about 20 acres and containing an estimated eight (8) acres of burial grounds, is associated with both Nike missile site H-06 and anti-aircraft gun site PSN 7/10. This landfill is therefore assumed to be the worst case as far as content is concerned. Under

this option, all the burial grounds associated with this landfill will be completely excavated to determine if there is any hazardous substance, regulated waste, or ordnance present. If any hazardous substance or regulated waste is found in this landfill and considered significant by the regulators, then, using the analogous concept, the burial grounds in the remaining nine landfills will be excavated fully, and all the hazardous substances and regulated wastes will be removed from the site. If no such material is found in H-06-L landfill, then adequate characterization (sampling procedures) will be carried out in the remaining landfills to determine if they contain any hazardous substances or regulated wastes. If a hazardous substance or regulated waste is found in a particular landfill, the burial grounds in that landfill will be fully excavated and the hazardous substances will be removed from the site.

The cost of this alternative depends on the number of landfills that would require total excavation of their respective burial grounds. The estimated cost for hazard mitigation, excavation of burial grounds in the H-06-L landfill, and characterization of the remaining nine landfills is estimated at approximately $3.4 million.

Implementation of this alternative supports the goal of the ERA. The approach will eliminate many unnecessary costs that might be involved with total excavation and no characterization of all landfills under the Hazard Removal option.

RECOMMENDATION

Because conditions at the site meet NCP section 300.415(b)(2) criteria for action, it is recommended that the preferred alternative be approved. This decision document represents approval of Option D. In addition to the original scope of this alternative, investigation of the possible presence of ordnance burial pits on the North Slope (Wahluke Slope) of the USDOE Hanford Site in Richland, Washington, will also be performed. The burial pits, if found, shall be properly investigated. The ordnance, if discovered, shall be handled according to current U.S. Army regulations. Any unknown substances discovered during the process of the cleanup/characterization must be discussed with the regulators to ensure proper disposal/remediation. Thorough, seasonally correct flora and fauna surveys shall be performed at each waste site prior to any characterization or remediation activities. Field screening for radionuclides shall also be performed during remediation activities on the North Slope. This decision was developed in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the administrative record for this project.

Ecology is the lead regulatory agency for this project. If you have any further questions, please contact Gary Freedman at (509) 736-3026.

Drusilla Butler, Program Manager
Nuclear Waste Program
Washington State Department of Ecology

Randall F. Smith, Director
Hazardous Waste Division
U.S. Environmental Protection
Agency, Region 10

GF:sl
Enclosure

cc: Walter Perro, USDOE
Michael Thompson, USDOE
Dennis Faulk, EPA
Douglas Sherwood, EPA
Administrative Record (North Slope ERA)